Serial No. 09/884,672
Art Unit No. 2134

LISTING OF CLAIMS

1.   (previously presented)   An ad-hoc radio communication verification system, comprising:

means for sending data for verification data generation from one data send/receive device to the other send/receive device, wherein the two send/receive devices are mutually connected by an ad-hoc radio connection;

in the one data send/receive device, means for generating verification data from the sent data for verification data generation produced using a first generation algorithm and outputting the generated verification data to its own verification data output section;

in the other data send/receive device, means for generating verification data from the received data for verification data generation produced using the first generation algorithm and outputting the generated verification data to its own verification data output section; and

JP920000134US1   -2-

Serial No. 09/884,672
Art Unit No. 2134

means for determining whether the verification data at
the verification data output sections of both the data
send/receive devices matches mutually,

wherein the first generation algorithm generates a
plurality of verification data, wherein for each
verification data, it is determined whether the verification
data at the verification data output sections of both the
data send/receive devices match mutually.

2. (original) The ad-hoc radio communication verification
system according to claim 1, wherein the verification data
is visual or auditory verification data.

3. (original) The ad-hoc radio communication verification
system according to claim 1, wherein the verification data
is output at the verification data output section both in
the visual form and auditory form.

4. (currently amended) The ad-hoc radio communication
verification system according to claim 1, further
comprising:

~~means for defining a function as an operator, for~~
~~defining a numeric on which the operator operates as an~~

JP920000134US1   -3-

Serial No. 09/884,672
Art Unit No. 2134

~~input to of the operator, and for defining an operation~~
~~result of the operator as an output of the operator;~~

means for establishing a serial sequence of operators that are composed of more than one operators arranged in series, wherein the operators relate to the same or different one-way functions; and

means for letting an input to the serial sequence of operators be the data for verification data generation and an output from the serial sequence of operators or a corresponding value be the verification data.

5. (canceled)

6. (currently amended) The ad-hoc radio communication verification system according to claim 1, further comprising:

~~means for defining a function as an operator, for~~
~~defining a numeric on which the operator operates as an~~
~~input to of the operator, and for defining an operation~~
~~result of the operator as an output of the operator;~~

means for establishing a serial sequence of operators that are composed of two or more of operators arranged in

JP920000134US1   -4-

Serial No. 09/884,672
Art Unit No. 2134

series, wherein the operators relate to the same or
different one-way functions;

means for letting an input to the serial sequence of
operators be the data for verification data generation and
outputs of two or more of operators selected from all
operators composing the serial sequence of operators or
corresponding values be the verification data respectively;
and

means for determining for each verification data
whether the verification data match mutually at the
verification data output sections of both the data
send/receive devices.

7.   (currently amended)   The   ad-hoc   radio   communication
verification   system   according   to   claim   1,   further
comprising:

means for defining a function as an operator, for
defining a numeric on which the operator operates as an
input for of the operator, and for defining an operation
result of the operator as an output of the operator;

means for establishing a plurality of operators that
relate to mutually different one-way functions;

JP920000134US1   -5-

Serial No. 09/884,672
Art Unit No. 2134

means for letting the data for verification data generation be a common input to each operator and an output of each operator or a corresponding value be the verification data respectively; and

means for determining for each verification data whether the verification data match mutually at the verification data output sections of both the data send/receive devices.

8. (original) The ad-hoc radio communication verification system according to claim 1, wherein the data for verification data generation is a public key of either data send/receive device.

9. (previously presented) An ad-hoc radio communication data send/receive system utilizing the ad-hoc radio communication verification system according to claim 8, comprising:

for each user, a portable terminal having a radio communication function and a personal computer having a radio communication function, wherein the portable terminal and personal computer of each user are connected by a secure communication path; and wherein each portable terminal comprises transmission means whereby a public key Kp of one

JP920000134US1   -6-

Serial No. 09/884,672
Art Unit No. 2134

user is transmitted from the portable terminal of the one
user to the portable terminal of the other user without
being tampered with, as determined by the ad-hoc radio
communication system, and the public key Kp is transmitted
from the portable terminal to the personal computer of each
user, and wherein each personal computer comprises means to
generate a symmetric key Kc such that the personal computer
of the other user generates a symmetric key Kc produced
using a second generation algorithm, while the personal
computer of the one user generates the symmetric key Kc
produced using the second generation algorithm from
information including a random number and an identifier for
the second generation algorithm transmitted from the
personal computer of the other user in cipher using the
public key; and thereafter both the personal computers send
and receive data in cipher using the symmetric key Kc.

10. (previously presented) An ad-hoc radio communication
data send/receive system utilizing the ad-hoc radio
communication verification system according to claim 8,
comprising, for each user, a portable terminal having a
radio communication function and a personal computer having
a radio communication function that are owned by each user,

JP920000134US1   -7-

Serial No. 09/884,672
Art Unit No. 2134

wherein the portable terminal and personal computer of each user are connected by a secure communication path; when the ad-hoc radio communication verification system verifies that a public key Kp of one user is transmitted from the portable terminal of the one user to the portable terminal of the other user without being tampered with, and wherein each personal computer comprises means to generate a symmetric key Kc such that the portable terminal of the other user generates a symmetric key Kc produced using a second generation algorithm, while the portable terminal of the one user generates the symmetric key Kc produced using the second generation algorithm from information transmitted from the portable terminal of the other user in cipher according to the public key, then the symmetric key Kc is transmitted from the portable terminal to the personal computer of each user; and thereafter both the personal computers send and receive data in cipher using the symmetric key Kc.

11. (previously presented) An ad-hoc radio communication data send/receive system, comprising, for each user, a portable terminal having a radio communication function and

JP920000134US1   -8-

Serial No. 09/884,672
Art Unit No. 2134

a personal computer having a radio communication function that are owned by each user, wherein the portable terminal and personal computer of each user are connected by a secure communication path; when it is verified that a public key Kp of one user is transmitted from the portable terminal of the one user to the portable terminal of the other user without being tampered with, the public key Kp is transmitted from the portable terminal to the personal computer of each user, and wherein each personal computer comprises means to generate a symmetric key Kc such that the personal computer of the other user generates a symmetric key Kc produced using a second generation algorithm, while the personal computer of the one user generates the symmetric key Kc produced using the second generation algorithm from information including a random number and an identifier for the second generation algorithm transmitted from the personal computer of the other user in cipher according to the public key; and thereafter both the personal computers send and receive data in cipher using the symmetric key Kc.

12. (previously presented) An ad-hoc radio communication data send/receive system, comprising, for each user, a portable terminal having a radio communication function and

JP920000134US1   -9-

Serial No. 09/884,672
Art Unit No. 2134

a personal computer having a radio communication function

that are owned by each user, wherein the portable terminal

and personal computer of each user are connected by a secure

communication path; when it is verified that a public key Kp

of one user is transmitted from the portable terminal of the

one user to the portable terminal of the other user without

being tampered with, and wherein each personal computer

comprises means to generate a symmetric key Kc such that the

portable terminal of the other user generates a symmetric

key Kc produced using a second generation algorithm, while

the portable terminal of the one user generates the

symmetric key Kc produced using the second generation

algorithm from information transmitted from the portable

terminal of the other user in cipher according to the public

key, then the symmetric key Kc is transmitted from the

portable terminal to the personal computer of each user;

thereafter both the personal computers send and receive data

in cipher using the symmetric key Kc.

13. (previously presented) A method for verifying an ad-hoc

radio communication, comprising the steps of:

   sending data for verification data generation from one

data send/receive device to the other send/receive device,

JP920000134US1   **-10-**

wherein the two send/receive devices are mutually connected by an ad-hoc radio connection;

in the one data send/receive device, generating verification data from the sent data for verification data generation produced using a first generation algorithm and outputting the generated verification data to its own verification data output section;

in the other data send/receive device, generating verification data from the received data for verification data generation produced using the first generation algorithm and outputting the generated verification data to its own verification data output section; and

determining whether the verification data at the sections of both the data sections of both the data send/receive devices matches mutually,

wherein the first generation algorithm generates a plurality of verification data, wherein for each verification data, it is determined whether the verification data at the verification data output sections of both the data send/receive devices match mutually.

14. (original) The method according to claim 13, wherein the verification data is visual or auditory verification data.

JP920000134US1   -11-

Serial No. 09/884,672
Art Unit No. 2134

15. (original) The method according to claim 13, wherein the verification data is output at the verification data output section both in the visual form and auditory form.

16. (currently amended) The method according to claim 13, further comprising the steps of:

~~defining a function as an operator, defining a numeric on which the operator operates as an input to the operator, and defining an operation result of the operator as an output of the operator;~~

establishing a serial sequence of operators that are composed of more than one operators arranged in series, wherein the operators relate to the same or different one-way functions;

letting an input to the serial sequence of operators be the data for verification data generation and an output from the serial sequence of operators or a corresponding value be the verification data.

17. (canceled)

JP920000134US1   -12-

Serial No. 09/884,672
Art Unit No. 2134

18.   (currently amended) The method according to claim 13,
further comprising the steps of:

~~defining a function as an operator, defining a numeric~~
~~on which the operator operates as an input to the operator~~
~~and defining an operation result of the operator as an~~
~~output of the operator;~~

establishing a serial sequence of operators that are
composed of two or more of operators arranged in series
wherein the operators relate to the same or different
one-way functions;

letting an input to the serial sequence of operators
be the data for verification data generation and outputs of
two or more of operators selected from all operators
composing the serial sequence of operators or corresponding
values be the verification data respectively; and

determining for each verification data whether the
verification data match mutually at the verification data
output sections of both the data send/receive devices.

19. (currently amended) The method according to claim 13,
further comprising the steps of:

~~defining a function as an operator, defining a numeric~~
~~on which the operator operates as an input to of the~~

JP920000134US1   -13-

Serial No. 09/884,672
Art Unit No. 2134

~~operator, and defining an operation result of the operator~~

~~as an output of the operator;~~

establishing a plurality of operators that relate to mutually different one-way functions;

letting the data for verification data generation be a common input to each operator and an output of each operator or a corresponding value be the verification data respectively; and

determining for each verification data whether the verification data match mutually at the verification data output sections of both the data send/receive devices.

20.   (original) The method according to claim 13, wherein the data for verification data generation is a public key of either data send/receive device.

21. (currently amended) The method for sending and receiving ad-hoc radio communication data, utilizing the verification method according to claim 20, comprising: a portable terminal having a radio communication function for each user and a personal computer having a radio communication function for ~~by~~ each user, wherein the portable terminal and personal computer of each user are connected by a secure

JP920000134US1   -14-

communication path; when the verification method verifies
that a public key Kp of one user is transmitted from the
portable terminal of the one user to the portable terminal
of the other user without being tampered with, the public
key Kp is transmitted from the portable terminal to the
personal computer of each user, then the personal computer
of the other user generates a symmetric key Kc produced
using a second generation algorithm, while the personal
computer of the one user generates the symmetric key Kc
produced using the second generation algorithm from
information including a random number and an identifier for
the second generation algorithm transmitted from the
personal computer of the other user in cipher according to
the public key; and thereafter both the personal computers
send and receive data in cipher using the symmetric key Kc.

22. (previously presented) The method for sending
and-receiving ad-hoc radio communication data, utilizing the
verification method according to claim 20, comprising: a
portable terminal having a radio communication function for
each user and a personal computer having a radio
communication function for each user, wherein the portable
terminal and personal computer of each user are connected by
JP920000134US1   -15-

Serial No. 09/884,672
Art Unit No. 2134

a secure communication path; when the verification method verifies that a public key Kp of one user is transmitted from the portable terminal of the one user to the portable terminal of the other user without being tampered with, the portable terminal of the other user generates a symmetric key Kc produced using a second generation algorithm, while the portable terminal of the one user generates the symmetric key Kc produced using the second generation algorithm from information transmitted from the portable terminal of the other user in cipher according to the public key, then the symmetric key Kc is transmitted from the portable terminal to the personal computer of each user; and thereafter both the personal computers send and receive data in cipher using symmetric key Kc.

23. (previously presented) The method for sending and receiving ad-hoc radio communication data, comprising: a portable terminal having a radio communication function for each user and a personal computer having a radio communication function for each user, wherein the portable terminal and personal computer of each user are connected by a secure communication path; when it is verified that a public key Kp of one user is transmitted from the portable

JP920000134US1   -16-

Serial No. 09/884,672
Art Unit No. 2134

terminal of the one user to the portable terminal of the other user without being tampered with, the public key Kp is transmitted from the portable terminal to the personal computer of each user, then the personal computer of the other user generates a symmetric key Kc produced using a second generation algorithm, while the personal computer of the one user generates the symmetric key Kc produced using the second generation algorithm from information including a random number and an identifier for the second generation algorithm transmitted from the personal computer of the other user in cipher according to the public key; and thereafter both the personal computers send and receive data, in cipher using the symmetric key Kc.

24. (previously presented) The method for sending and receiving ad-hoc radio communication data, comprising: a portable terminal having a radio communication function for each user and a personal computer having a radio communication function for each user, wherein the portable terminal and personal computer of each user are connected by a secure communication path; when it is verified that a public key Kp of one user is transmitted from the portable terminal of the one user to the portable terminal of the

JP920000134US1   -17-

Serial No. 09/884,672
Art Unit No. 2134

other user without being tampered with, the portable terminal of the other user generates a symmetric key Kc produced using a second generation algorithm, while the portable terminal of the one user generates the symmetric key Kc produced using the second generation algorithm from information transmitted from the portable terminal of the other user in cipher according to the public key, then the symmetric key Kc is transmitted from the portable terminal to the personal computer of each user; thereafter both the personal computers send and receive data in cipher using the symmetric key Kc.

25. (previously presented) A recording medium recording a program for an ad-hoc radio communication verification system, wherein the verification system comprising:

means for sending data for verification data generation from one data send/receive device to the other send/receive device, wherein the two send/receive devices are mutually connected by an ad-hoc radio connection;

in the one data send/receive device, means for generating verification data from the sent data for verification data generation produced using a first generation algorithm and outputting the generated

JP920000134US1   -18-

Serial No. 09/884,672
Art Unit No. 2134

verification data to its own verification data output
section;

in the other data send/receive device, means for
generating verification data from the received data for
verification data generation produced using the first
generation algorithm and outputting the generated
verification data to its own verification data output
section; and

means for determining whether the verification data at
the verification data output sections of both the data
send/receive devices matches mutually,

wherein the first generation algorithm generates a
plurality of verification data, wherein for each
verification data, it is determined whether the verification
data at the verification data output sections of both the
data send/receive devices match mutually.

26. (original) The recording medium according to claim 25,
wherein the verification data is visual or auditory
verification data.

27. (original) The recording medium according to claim 25,
wherein the verification data is output at the verification

JP920000134US1   -19-

Serial No. 09/884,672
Art Unit No. 2134

data output section both in the visual form and auditory

form.

28. (currently amended) The recording medium according to

claim 25, wherein the verification system further

comprising:

~~means for defining a function as an operator, for~~

~~defining a numeric on which the operator operates as an~~

~~input to of the operator, and for defining an operation~~

~~result of the operator as an output of the operator;~~

means for establishing a serial sequence of operators

that are composed of more than one operators arranged in

series, wherein the operators relate to the same or

different one-way functions; and

means for letting an input to the serial sequence of

operators be the data for verification data generation and

an output from the serial sequence of operators or a

corresponding value be the verification data.

29. (canceled)

JP920000134US1   -20-

Serial No. 09/884,672
Art Unit No. 2134

30. (previously presented) A delivery system for delivering a program for an ad-hoc radio communication system, the verification system comprising:

means for sending data for verification data generation from one data send/receive device to the other send/receive device, wherein the two send/receive devices are mutually connected by an ad-hoc radio connection;

in the one data send/receive device, means for generating verification data from the sent data for verification data generation produced using a first generation algorithm and outputting the generated verification data to its own verification data output section;

in the other data send/receive device, means for generating verification data from the received data for verification data generation produced using the first generation algorithm and outputting the generated verification data to its own verification data output section; and

means for determining whether the verification data at the verification data output sections of both the data send/receive devices matches mutually.

JP920000134US1   -21-

Serial No. 09/884,672
Art Unit No. 2134

wherein the first generation algorithm generates a plurality of verification data, wherein for each verification data, it is determined whether the verification data at the verification data output sections of both the data send/receive devices match mutually.

31.   (previously presented) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing ad-hoc radio communication, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 1.

32.   (previously presented) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing ad-hoc radio communication, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 4.

JP920000134US1   **-22-**

Serial No. 09/884,672
Art Unit No. 2134

33.   (previously presented) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing ad-hoc radio communication, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 9.

34.   (previously presented) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing ad-hoc radio communication, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 10.

35.   (original) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing ad-hoc radio communication, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 11.

JP920000134US1   -23-

Serial No. 09/884,672
Art Unit No. 2134

36. (canceled)

37. (original) An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing ad-hoc radio communication, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 13.

38. (original) An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing ad-hoc radio communication, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 21.

39. (original) An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing ad-hoc radio communication, the computer readable program code means in

JP920000134US1   **-24-**

Serial No. 09/884,672
Art Unit No. 2134

said article of manufacture comprising computer readable
program code means for causing a computer to effect the
steps of claim 22.

40. (original) An article of manufacture comprising a
computer usable medium having computer readable program code
means embodied therein for causing ad-hoc radio
communication, the computer readable program code means in
said article of manufacture comprising computer readable
program code means for causing a computer to effect the
steps of claim 23.

41. (original) An article of manufacture comprising a
computer usable medium having computer readable program code
means embodied therein for causing ad-hoc radio
communication, the computer readable program code means in
said article of manufacture comprising computer readable
program code means for causing a computer to effect the
steps of claim 24.

42. (canceled)

43. (canceled)

JP920000134US1   -25-